



Be sure to follow proper guidelines for CAN bus cabling and termination.

**I/O Device CAN Bus Master - SmartMotors can now interface with standard CiA 301 CANopen devices including but not limited to:**

- Remote digital/analog/mixed signal I/O
- CAN bus absolute or relative encoders
- Inclinometers
- Load cells
- Temperature controllers
- Pneumatic valve blocks
- And more

Basic control allows 8, 16, or 32-bit sized data objects with support for both PDO and SDO protocols. The supported profiles include but are not limited to I/O profile, encoder profile, and DS4xx profile. This provides the ability to:

- Dynamically map SmartMotor PDOs, map another device's PDOs, start the NMT state
- A SmartMotor can send/receive up to 5 PDOs each for RX (Receive) and TX (Transmit)
- Read/write SDOs in expedited mode only; which works up to 32-bit data

Multiple SmartMotors and multiple I/O devices may be on the same CAN bus. This combined with Combitronic motor-to-motor communications allows for complex, multi-axis, multi-I/O-device network control. **Now you can achieve full machine control with just the SmartMotors -- no other HMI or bus master is required!**

**COMBITRONIC™ High-Speed Communications** is a protocol that operates over a standard "CAN" (Controller Area Network) interface. It may simultaneously coexist with either CANopen or DeviceNet protocols. Unlike these common protocols however, Combitronic™ requires no single dedicated master to operate. Each integrated servo connected to the same network communicates on an equal footing, sharing all information, and therefore, sharing all processing resources.

**Combitronic protocol features:**

- 120 axis node count
- 1 MHz bandwidth
- No master required
- No scan list or node list set up required
- All nodes have full read/write access to all other nodes



Combitronic™ technology allows any motor's program to read from, write to, or control any other motor simply by tagging a local variable or command with the other motor's CAN address. All SmartMotors become one multi-tasking, data-sharing system without writing a single line of communications code or requiring detailed knowledge of the CAN protocol. The only prerequisite is to have matched baud rates and unique addresses.

For more details, see [animatics.com/combi](http://animatics.com/combi)

**Combitronic technology enables standalone multi-axis linear interpolation:**

```

a=1 b=2 c=3           'Motor addresses, x, y and z
x=123000              'X Axis Target Position
y=20000               'Y Axis Target Position
z=8000                'Z Axis Target Position
PTS(x;a,y;b,z;c)     'Set 3-axis synchronized target position
GS                    'Go, 3-axis linear interpolation
TSWAIT                'Wait until 3 axis move is complete
    
```

